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THE PART-TIME PLAN IN THE CENTRALIA (ILLINOIS) TOWNSHIP HIGH SCHOOL

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Of all the problems which confront school administrators at the present time, that of industrial training is the most pressing and, we might add, the most difficult. In these latter days when we are paying more attention to the practical needs of our boys and girls, we have begun to cast around for the purpose of discovering some scheme that will produce the desired results. A few years ago, we thought a panacea for all our industrial ills had been found in the new gospel that was being disseminated by the manual-training enthusiasts. Through the legerdemain of the schoolmaster we felt that we were on the threshold of a new industrial era. But we have at last come to realize that a boy's place in the world as a carpenter is not assured after having taken a few high-school courses in manual training. Some of our secondary schools, both public and private, have spent thousands of dollars in equipping modern and up-to-date machine shops. But from the standpoint of fitting boys for effective participation in industrial life, we have yet many things to learn.

We shall endeavor in this article to limit our remarks to a plan which was first adopted in the Centralia Township High School in the fall of 1914. Inasmuch as the Illinois Central Railroad Company was at that time building just south of Centralia one of the largest terminals in the United States and stood ready to co-operate with the high school, the time seemed opportune for undertaking a scheme in the interests of industrial training which seemed to be full of promise. The co-operative educational plan was tried out for a period of a few months after which time it was abandoned for the reason that there was a strike on involving the machinists of the Harriman system, and the feeling was general among the union men of the city that the high-school boys who were working in the shops as apprentices were thereby aiding the Illinois Central in winning the strike. After a thorough discussion of this matter between the board and the representatives of the unions, it was decided that the interests of the school would be best conserved by discontinuing the plan until the difficulties between the men and the company had been adjusted. In the summer of 1915 the strike was officially declared off, and as soon as arrangements could be made the plan was resumed.

I hasten to say at the outset that the co-operative plan between the Centralia Township High School and the Illinois Central is not a new idea by any means, as this plan has been worked out quite extensively in Massachusetts. It is substantially what is commonly known as the Fitchburg plan. The leading exponent of this idea is Dean Herman Schneider, who has been very successful in adapting the co-operative plan to the department of engineering of the University of Cincinnati and the local industries of that city. The workings of the plan in Centralia together with its applications might prove of interest to those who are endeavoring to direct boys in their teens into some gainful occupation, thus enabling them to earn a decent living.

The Illinois Central is not in any sense a charitable institution. It is not, however, the soulless corporation many people think it to be. The object of the company is to train into its service a high class of mechanics, an object that is purely selfish, but commendable. In time, the Illinois Central will have the best-trained mechanics of any railroad system in the United States, obviously a very valuable asset.

Under the co-operative plan all the facilities of the company are placed at the disposal of our boys. Every machine in the shops is motor driven. This gives the boys an opportunity to come in contact with machinery that cost the Illinois Central over $500,000 and is up-to-date in every respect. Such equipment as this is much more than any high school in the country could afford. It is also a well-known fact that machines become obsolete inside of seven years and must be replaced if an establishment is to be able to meet competition successfully. High schools undertaking to train boys in the machine trades must assume a heavy financial obligation if they expect to maintain their work upon a high plane of efficiency as machinery equipment soon runs into money, its upkeep is considerable, and its replacement burdensome. By co-operating with the Illinois Central it was unnecessary for our school to invest thousands of dollars in expensive machinery, and we could say in all truth that the equipment for our industrial-arts course cost over a half-million dollars.

In the operation of the plan two boys constitute a unit. While one boy is in school the other is working in the shops. The first time we tried the plan the boys alternated every other day. This arrangement was unsatisfactory for the reason that the boy no sooner got a good start in the shops than he had to readjust himself to the school work and vice versa. This last year the period was lengthened to one week. The change to the longer period was much more satisfactory.

The company will accept as an apprentice any boy sixteen years of age or over who is recommended by the principal. During the operation of the co-operative plan the master mechanic has consistently refused to accept any applicant not coming from the high school. Before beginning work there are certain formalities which the boy must observe. It is necessary for him to pass a physical examination, fill out and sign the ordinary apprentice indenture, and, if under twenty-one years of age, he must furnish the company with a minor's release duly signed by the parent or guardian. Each boy was given to understand at the outset that it would be necessary for him to be diligent and faithful in his work at the shops, that he would be held to the same strictness in observance of the shop rules as any other employee, and that his school work was to be maintained at a passing grade. Unsatisfactory work in either the shop or school was sufficient cause to bar the student from further participating in the benefits of the plan.

Apprentices are paid on a sliding scale of wages depending upon the length of time they are in the service of the company. The regular apprenticeship extends over a period of four years. The Illinois Central pays at the rate of 16 cents per hour for the first year, 17 cents per hour for the third six months, 19 cents per hour for the fourth six months, 22 cents per hour for the seventh six months, and 24 cents per hour for the eighth six months. After the first thirty days in the employ of the company, the boy may obtain extra credit on his apprenticeship for shop or manual-training work upon the recommendation of the master mechanic or the shop superintendent. If he elects the co-operative plan when he enters high school, by working during the summer vacation he will have put in two years and five months on his apprenticeship. As evidence of their faith in the efficacy of the plan, the Illinois Central will grant credit to the extent of three years to the student finishing high school while working in the shops. Only one additional year is required for the apprentice to become a regular journeyman of his trade. He will then be in a position to earn a wage of from 40 to 50 cents per hour.

The following schedule has been arranged for the apprentice so that he may be made thoroughly familiar with all the different phases of the work of the particular trade he has selected:

MACHINIST

Drill press (large and small)	2	months
Lathe (bolt lathe first; then general)	7	"
Shaper	2	"
Planer	2	"
Slotter	2	"
Boring-mill	3	"
Work above running board consisting of hand rails, pops, whistles, boiler mountings, and all similar work	4	"
Frames, shoes and wedges, wheeling engines, putting up spring rigging, expansion gear, removing and applying cylinders, etc	4	"
Applying pistons and steam chests, putting up motion work, lining guides, etc	4	"
Vise work on rods, etc	4	"
Vise work on motion parts, pistons, crossheads, etc	5	"
Toolroom work, handing out tools, running machines as tool and drill grinder, lathe, milling machine, etc	4	"
Vise work on tools to consist of general repairs to tools of the various departments, die sinking, etc	5	"
Total	48	months

When the apprentice is not placed in the toolroom he is assigned to the air brake department for the following work:

Overhauling and applying brake rigging, air pumps, lubricators, engineer's valve, injectors, steam and air gauges, gauge cocks, pops, whistles, and all work handled in this department	9 months

As the exigencies of the shopwork demand, the apprentices are assigned to the roundhouse repair gang and to work on the surface or laying-out table. The time allotted to these departments is as follows:

Roundhouse	from 6 months to 1 year
Machinery repair gang	from 2 to 6 months
Surface table	from 1 to 3 months

Credit is given the apprentice for the experience he gets and the time spent on the above class of work, and he is relieved from serving any time on the regular schedule on work of a similar nature.

BOILER SHOPS

Heating rivets, scaling boilers, and general helping on light work, punch and shears	6	months
Ash pan and netting work; also as much sheet-iron work and miscellaneous light boiler work as possible	10	"
Tank work such as patching, riveting, applying angles, etc	6	"
Flue setting	6	"
Fire-box work, reaming, tapping, stay-bolt holes, etc	8	"
Working with boilermaker on general work such as flanging, riveting, applying new sheets, bracing and stay-bolt work	6	"
The last six months to be spent on work under the instruction of the layer-out or working on general boilermaker's work with helper and handy man, the apprentice to be in full charge of the work. The work to consist chiefly of patches, half side sheets, door sheets, back and front sheets, smoke box extensions, smoke box liners, and general boilermaker's work	6	"
Total	48	months

BLACKSMITH

Running steam hammer	6 months
Heating bolts	3 "
Helping on small fires (light work)	6 "
Running bolt header and forging machines	3 "
Helping on tool fire	6 "
Light work on fire with helper	8 "
Heavy work on fire not requiring any particular skill	10 "
Working on fire, all classes of work, filling the places of absent blacksmiths and doing general blacksmith work	6 "
Total	48 months

The last year of the blacksmith apprentice work consists of general blacksmithing, working on frame fire, and heavy work under steam hammer such as drawing out, forging billets, piston rods, equalizers, main and side rods, etc., and such other work as will familiarize him with handling iron under the large hammer. He is also afforded the opportunity to operate the large upsetting machine. This is done in the absence of the regular man.

TIN AND PIPE

Helping on pipework	10 months
Injectors	6 "
In cab	10 "
Air brake pipes	6 "
Jackets and sheet-iron work	4 "
Tin roofing and headlights, classification lamps, lanterns, oil cans, and general light tinsmith work	6 "
General pipe- and tinwork	6 "
Total	48 months

CAR DEPARTMENT

Carpenter shop	6 months
Making boxes, etc	6 "
Benchwork	6 "
Passenger shop, freight shop	6 "
Stripping, etc	6 "
Platform work	6 "
Body work, inside finish and trimming	6 "
All-round carwork, office work in car department	6 "
Total	48 months

The work the student does in high school is to be correlated with the shopwork as closely as possible. This can be done most effectively by modifying the administration and content especially of the English, mathematics, and science courses so that they will contribute in a much larger measure than they now do to the practical needs of everyday life. The one point of emphasis on the work of the school which needs close attention is that of teaching boys how to read blue prints. This is the weakest point the shop foremen find in the educational equipment of high-school apprentices. Mechanical drawing is of the utmost importance in enabling the boy to become proficient as a machinist, a boilermaker, a carpenter, or a blacksmith.

The first time the plan was put into operation in Centralia, the Illinois Central employed a man who was called a co-ordinator. It was his duty to co-operate with the high school in every way possible to further the efficiency of the apprentices. He also gave a great deal of his time to the apprentice boys who were not working under the co-operative plan. As this particular co-ordinator was a graduate of the mechanical department of the University of Illinois and had supplemented his college work with practical training, the results of his work were very gratifying. The co-ordinator was an important cog in the co-operative machine.

Last winter we had three units (six boys) in the shops while others were anxious to begin the work as soon as the company had places for them. Sooner or later, there should be at least forty boys learning the different trades in the Illinois Central shops at Centralia. The local officials, as well as Mr. W. L. Park, the vice-president of the company, are giving every encouragement to make the plan a success.

The boys are able to earn as much as fifteen dollars a month while going to school. This means that, in some cases, they are of some real financial assistance to their parents. Otherwise, the economic pressure might be so great, as it is oftentimes, that these boys would be unable to remain in school. The work, together with the remuneration, creates in them a feeling of independence that is worthy of encouragement. If these boys can buy their own clothes and have some extra spending money they are acquiring those habits early in life that will mean much to them when they become men. The plan was the means, in several instances, not only of keeping boys in school, but some came back to high school after having been out for some time. One such student came back, graduated from high school, and was in his junior year at the University of Illinois when he was chosen as one of the members of the Officers' Reserve Corps at Fort Sheridan. He has already been assured of a position with the Illinois Central as soon as he finishes his college course. Our experience as regards the scholarship of the boys participating in the co-operative plan was that the standard of their work was not impaired as a result of their working in the shops. Manual labor, however, does not usually appeal to the valedictorian type of high-school boy. While the plan has not been in operation in Centralia long enough to draw any very definite conclusions regarding some phases of the school work, we feel sure that it has many strong points to commend it.

Someone has made the statement that we are a nation of sixth-graders. I found upon inquiring among several of the shopmen that most of them had discontinued their school work while in the third grade. If the boy can be held in school and be taught a trade at the same time under the actual conditions of that trade, it is going to make for a far more intelligent tradesmen class in the future. This will mean, too, a greatly improved community citizenship. It will furnish a leaven to trade unions that is so necessary and fundamental in times like the present when the whole fabric of our economic and political structure is threatened by the activities of the I.W.W.

Those of our high-school students who have taken up the work in the shops have enjoyed it very much. Boys who are mechanically inclined are never happier than when they are around machinery. One of the most surprising things in connection with the work was the wonderful skill and efficiency shown by some of the apprentices after they had been in the shops for a short time. We are coming to see more clearly than ever before that our high schools must both educate and train young men and women in the trades as well as prepare them to enter the learned professions if we are to compete successfully in the world's markets and maintain our

American standard of living. The human wastage as a result of our rigid curricula is appalling. It is said that there are forty-nine varieties of human nature. Our present appeal is to only a small percentage of this number. This suggests the importance of courses in vocational guidance and industrial training in our schools.

In order to operate the plan successfully from the standpoint of the school authorities, it is necessary for the person who has the boys directly under his care to work with them, come into personal contact with their problems, and gain the confidence of the men with whom the boys work as well as that of the foremen and the master mechanic. The school teacher will soon find that the regular workmen in giving ordinary instructions to the apprentices are talking in a language that he is unable to understand. The boys must be watched carefully and coached constantly. Their very fondness for the shopwork tends to neutralize their interest in school.

We tried to extend the co-operative idea to other trades within the city, but we met with no success, chiefly because the local plumbing, laundering, and other establishments were not large enough to furnish the elasticity necessary to a successful working of the plan.

While no one has as yet worked out with any degree of finality the technique of the co-operative plan, it seems to be the most practicable scheme in industrial training that is operative at the present time.